



AEROGEL INSTALLATION PROCEDURE

PHENIX Procedure No. PP-2.5.5.4-23

Revision A

Date: 9-2-03

Hand Processed Changes

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Approvals

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PHENIX Procedure # PP-2.5.5.4.23 Rev A

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	CURRENT OVERSIGHT
A	First Issue	9/02/2003	n/a	W. Stokes, S. Sato, E. Killian, M. Gaffney	n/a
DEACTIVATED	Installation Completed.	7/22/2007	n/a	D. Lynch, R. Pisani, P. Giannotti	D. Lynch

Aerogel Installation Procedure

1. Purpose and Scope

This document describes the method to safely handle and install the Aerogel detector onto the West Carriage using commercially available lifting equipment. The detector is built as two identical arrays weighing about 450 pounds each. This procedure can be reversed for removal of the detector arrays.

Summary

In order to minimize the amount of structural (non-active-detector) material used, the aerogel detector array has been designed as a hanging assembly, which can not stand by itself on the floor. 80 aerogel detector boxes are assembled into an array structure hanging from a commercial gantry, which is used as an assembly frame. The array hangs by two commercial trolleys, which are integral parts of the array structure. The array is about 82 inches long, 14 inches wide and 54 inches high. Stops on the frame I-beam prevent the array from rolling during assembly and transportation. Cables and hoses will be routed to the outside end and tied up out of the way for installation.

The six-inch beam of the frame serves as the lifting beam to carry the array up to a transition beam mounted on the west carriage. The array is then rolled from the lift beam to the transition beam to the support beam mounted in sector 1 of the carriage. I-beam clamps rated at 1000 Lb. each are clamped to the top of the gantry beam directly above the trolleys to provide lift points for the array/beam assembly.

Figures 1 and 2 illustrate the above summary.

2. Responsibilities

Only trained BNL technicians shall perform the tasks described herein, under the supervision of the PHENIX Building 1008 Lead Technician.

3. Prerequisites

- 3.1. The support beam and I-beam extension must be in place on the west carriage, leveled and aligned to receive the aerogel array. The support beam must have a temporary trolley stop in place on its extreme north end as extra insurance against overshoot during the array installation.

- 3.2. The array on its frame will have been rolled into the PHENIX IR to within crane reach, with beam clips and shackles in place.
- 3.3. The array will have been located such that the lift beam is level when suspended from crane.
- 3.4. The West carriage must be in its retracted position (closest to west wall).
- 3.5. All personnel performing tasks described herein shall possess a current BNL Safety Awareness Certificate (SAC).
- 3.6. All personnel performing tasks described herein shall possess a current training certifications for the equipment used, per BNL ES&H standard 1.6.0.
- 3.7. All personnel performing tasks described herein shall wear proper personal protective equipment, per BNL ES&H standard 1.16.0.
- 3.8. All materials handling equipment shall have been maintained and inspected per BNL ES&H standard 1.6.0.
- 3.9. Only personnel actually involved with the handling or installation process shall be permitted in the work area.
- 3.10. The handrails will have been removed from the south upper west rack platforms and the area taped off.

4. Precautions

- 4.1 Avoid lifting detector over unprotected sections of beam pipe.
- 4.2 Check that the entire path through the IR is clear.
- 4.3. Identify north and south ends of detector per assembly drawing. (Also marked on frame I-beam)
- 4.4. Check to ensure that trolley stops are firmly in place on the lift beam.
- 4.5. Ensure that the retaining strap has been installed on the pre-amp end of the array.

5. Required equipment

Two slings, rated 1 ton min., 4 ft. long min.

Two 1/2 inch shackles, rated 1 ton min.

PHENIX IR (Bldg. 1008) Crane (12 ton) with 2 auxiliary hoists (1 ton each).

Two tag lines.

6. Procedure

6.1. Using the two shackles and slings, and the 12-ton crane, lift the frame/array assembly just enough to get all the weight on the crane.

6.2. Carefully remove support legs from frame, and put them aside.

6.3. Attach tag lines to the array and orient the array east-west.

6.4. Lift the array and move it to the south end of the west carriage and align the north end of the lift beam with the transition beam on the carriage.

6.5. Use the splice plate to firmly clamp the lift beam to the I-beam extension, and adjust crane to level the lift beam.

6.6. Remove trolley stops as required to allow array to roll north, and slowly roll the array onto the support beam and locate it on the north end. Use restraining strap to bolt the array into position on the support beam.

6.7. Remove temporary trolley stop, lifting gear and I-beam extension assembly.

6.8. Use the jacking screws located on each end of the support beam to raise the array approximately 6 inches to its "final" position. Coordinate jacking to keep beam reasonably level during this operation. Check and adjust for level when through.

7. References

7.1. Aerogel Detector Frame Assembly drawing 105-0215-037 (2 sheets)

7.2. Aerogel Detector I-Beam Extension Assembly drawing 105-0215-038

8. **Figures**

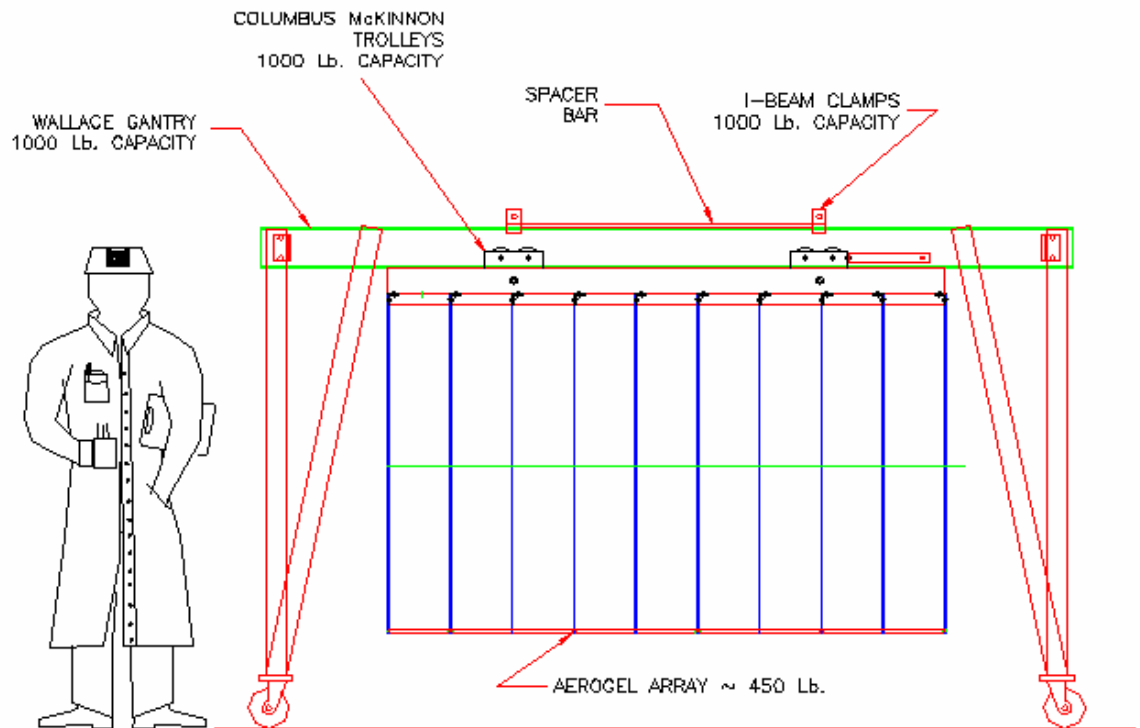


FIGURE 1 ARRAY ASSEMBLED ON GANTRY

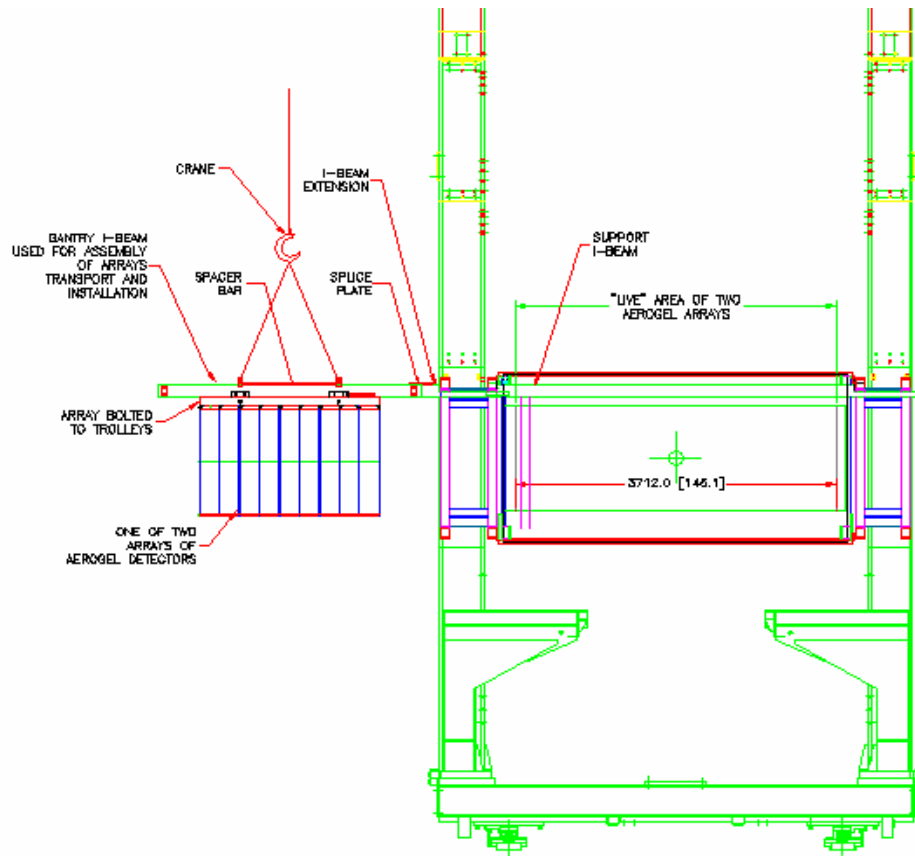


FIGURE 2. Installing Aerogel Array in West Carriage

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